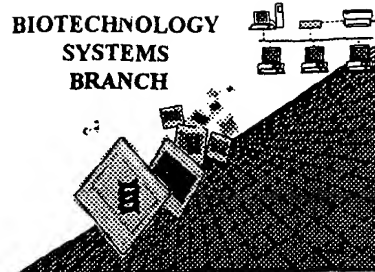


RAW SEQUENCE LISTING **ERROR REPORT**



The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 09/876,348
Source: 018E
Date Processed by STIC: 6/27/2001

THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.

PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:

- 1) INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,**
- 2) TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY**

FOR CRF SUBMISSION QUESTIONS, PLEASE CONTACT MARK SPENCER, 703-308-4212.

FOR SEQUENCE RULES INTERPRETATION, PLEASE CONTACT ROBERT WAX, 703-308-4216.

PATENTIN 2.1 e-mail help: patin21help@uspto.gov or phone 703-306-4119 (R. Wax)

PATENTIN 3.0 e-mail help: patin3help@uspto.gov or phone 703-306-4119 (R. Wax)

TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE CHECKER VERSION 3.0 PROGRAM, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW:

Checker Version 3.0

The Checker Version 3.0 application is a state-of-the-art Windows based software program employing a logical and intuitive user-interface to check whether a sequence listing is in compliance with format and content rules. Checker Version 3.0 works for sequence listings generated for the original version of 37 CFR §§1.821 – 1.825 effective October 1, 1990 (old rules) and the revised version (new rules) effective July 1, 1998 as well as World Intellectual Property Organization (WIPO) Standard ST.25.

Checker Version 3.0 replaces the previous DOS-based version of Checker, and is Y2K-compliant. Checker allows public users to check sequence listings in Computer Readable form (CRF) before submitting them to the United States Patent and Trademark Office (USPTO). Use of Checker prior to filing the sequence listing is expected to result in fewer errored sequence listings, thus saving time and money.

Checker Version 3.0 can be down loaded from the USPTO website at the following address:

<http://www.uspto.gov/web/offices/pac/checker>

OICE

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/876,348

DATE: 06/27/2001

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

error throughout
Does Not Comply
Corrected Diskette Needed

SEQUENCE LISTING

C--> 3 (1) GENERAL INFORMATION:

4 (i) APPLICANT: Horwath, K. L., et al.

5 (ii) TITLE OF INVENTION: Nucleic Acids Sequences Encoding Type III

6 Tenebrio Antifreeze Proteins and Method for Assaying

Activity.

7 (iii) NUMBER OF SEQUENCES: 48

C--> 8 (iv) CORRESPONDENCE ADDRESS:

9 (A) ADDRESSEE: Dr. Kathleen L. Horwath

10 (B) STREET: Department of Biological Sciences, Binghamton University

11 (C) CITY: Binghamton

12 (D) STATE: New York

C--> 13 (F) ZIP: 13902-6000

C--> 14 (v) COMPUTER READABLE FORM:

15 (A) MEDIUM TYPE: Diskette, 3.50 inch, 1.4 Mb storage

16 (B) COMPUTER: IBM AT/ATX compatible

17 (C) OPERATING SYSTEM: Windows 95/98

18 (D) SOFTWARE: Microsoft Word

19 (vi) CURRENT APPLICATION DATA:

C--> 20 (A) APPLICATION NUMBER: US/09/876,348

C--> 21 (B) FILING DATE: 07-Jun-2001

22 (C) CLASSIFICATION:

C--> 23 (vii) PRIOR APPLICATION DATA:

24 (A) APPLICATION NUMBER: 60210446

25 (B) FILING DATE: June 8, 2000

C--> 26 (viii) ATTORNEY/AGENT INFORMATION:

27 (A) NAME: Mark Levy, Attorney-at-Law

28 (B) REGISTRATION NUMBER: 29,188

29 (C) REFERENCE/DOCKET NUMBER: RB125

C--> 30 (ix) TELECOMMUNICATION INFORMATION:

31 (A) TELEPHONE: 607-722-660

32 (B) TELEFAX: 607-724-2207

ERRORED SEQUENCES

C--> 60 (2) INFORMATION FOR SEQ ID NO: 2

61 (i) SEQUENCE CHARACTERISTICS:

62 (A) LENGTH: 566 base pairs

63 (B) TYPE: nucleic acid

64 (C) STRANDEDNESS: double

65 (D) TOPOLOGY: linear

66 (ii) MOLECULE TYPE: cDNA to mRNA

67 (iii) HYPOTHETICAL: no

68 (iv) ANTI-SENSE: no

69 (vi) ORIGINAL SOURCE:

70 (A) ORGANISM: Tenebrio molitor

C--> 71 (C) INDIVIDUAL ISOLATE: none

*FYI: all
U.S. applications
filed on or after
July 1, 1998, and
which cannot
claim a prior
application filed
before July 1, 1998,
must be in new
Sequence Rules
format.*

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/876,348

DATE: 06/27/2001

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

C--> 72 (G) CELL TYPE: fat body and whole organism
 73 (vii) IMMEDIATE SOURCE:
 74 (A) LIBRARY: cDNA
 75 (B) CLONE: 13.17
 76 ~~(ix) FEATURES~~ delete if no response; the valid heading
 78 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:
 E--> 80 GTGGATCCAA AGAATTCGGC ACGAGACTAC TAAG ATG AAG TTG CTC
 81 Met Lys Leu Leu
 82 -15
 E--> 84 TGT TGT CTA ATC TCC CTC ATT CTG TTG GTC ACA GTT CAG GCC CTG 81
 85 Cys Cys Leu Ile Ser Leu Ile Leu Leu Val Thr Val Gln Ala Leu
 86 -10 -5 1
 E--> 88 ACC GAG GCA CAA ATT GAG AAA CTG AAC AAG ATC AGC AAA AAA TGT 126
 89 Thr Glu Ala Gln Ile Glu Lys Leu Asn Lys Ile Ser Lys Lys Cys
 90 5 10 15
 E--> 92 CAA AAT GAA AGT GGA GTG TCG CAA GAG ATC ATA ACC AAA GCT CGC 171
 93 Gln Asn Glu Ser Gly Val Ser Gln Glu Ile Ile Thr Lys Ala Arg
 94 20 25 30
 E--> 96 AAC GGT GAC TGG GAG GAC GAT CCT AAA CTG AAA CGC CAA GTT TTT 216
 97 Asn Gly Asp Trp Glu Asp Asp Pro Lys Leu Lys Arg Gln Val Phe
 98 35 40 45
 E--> 100 TGC GTG GCC AGG AAC GCC GGT CTG GCC ACG GAA TCG GGA GAG GTG 261
 101 Cys Val Ala Arg Asn Ala Gly Leu Ala Thr Glu Ser Gly Glu Val
 102 50 55 60
 E--> 104 GTG GTC GAC GTG TTG AGG GAG AAG GTG AGG AAG GTC ACT GAC AAC 306
 105 Val Val Asp Val Leu Arg Glu Lys Val Arg Lys Val Thr Asp Asn
 106 65 70 75
 E--> 108 GAC GAA GAA ACT GAG AAA ATC ATC AAT AAG TGC GCC GTC AAG AGA 351
 109 Asp Glu Glu Thr Glu Lys Ile Ile Asn Lys Cys Ala Val Lys Arg
 110 80 85 90
 E--> 112 GAT ACT GTT GAA GAG ACG GTG TTC AAT ACT TTC AAA TGT GTC ATG 396
 113 Asp Thr Val Glu Glu Thr Val Phe Asn Thr Phe Lys Cys Val Met
 114 95 100 105
 E--> 116 AAA AAC AAG CCA AAG TTC TCA CCA GTT GAT TGA ACCACCACGA 439
 117 Lys Asn Lys Pro Lys Phe Ser Pro Val Asp *
 118 110 115
 E--> 120 CTAGTAGATG GTTCAAATGG TGTGCTTTAC ATATAAAAAT AAAGTGTTC 489
 E--> 122 TGATGTAAAA AAAAAAAAAA AAAAAAAAAA AACTCGAGAG TATTCTAGAG 539
 E--> 124 CGGCCGCGGG CCCATCGTTT TCCACCC 566
 C--> 127 (2) INFORMATION FOR SEQ ID NO: 3
 128 (i) SEQUENCE CHARACTERISTICS:
 129 (A) LENGTH: 134 Amino Acids
 130 (B) TYPE: Amino Acid
 131 (C) STRANDEDNESS: single
 132 (D) TOPOLOGY: linear
 133 (ii) MOLECULE TYPE: Protein
 134 (iii) HYPOTHETICAL: no
 135 (iv) ANTI-SENSE: no
 136 (vi) ORIGINAL SOURCE:

36 is
 (ix) FEATURE?
 =
 46
 ↓
 nos.
 off
 ↓

P.3

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

137 (A) ORGANISM: Tenebrio molitor
 C--> 138 (C) INDIVIDUAL ISOLATE: none
 C--> 139 (G) CELL TYPE: fat body and whole organism
 140 (vii) IMMEDIATE SOURCE:
 141 (A) LIBRARY: cDNA
 142 (B) CLONE: 13.17
 143 ~~(ix) FEATURES~~
 145 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:
 147 Met Lys Leu Leu Cys Cys Leu Ile Ser Leu Ile Leu Leu Val Thr Val
 148 -15 -10 -5
 150 Gln Ala Leu Thr Glu Ala Gln Ile Glu Lys Leu Asn Lys Ile Ser Lys
 E--> 151 1 1 5 5 10 10 15
 153 Lys Cys Gln Asn Glu Ser Gly Val Ser Gln Glu Ile Ile Thr Lys Ala
 154 15 20 25 30
 156 Arg Asn Gly Asp Trp Glu Asp Asp Pro Lys Leu Lys Arg Gln Val Phe
 157 35 40 45
 159 Cys Val Ala Arg Asn Ala Gly Leu Ala Thr Glu Ser Gly Glu Val Val
 160 50 55 60
 162 Val Asp Val Leu Arg Glu Lys Val Arg Lys Val Thr Asp Asn Asp Glu
 163 65 70 75
 165 Glu Thr Glu Lys Ile Ile Asn Lys Cys Ala Val Lys Arg Asp Thr Val
 166 80 85 90
 168 Glu Glu Thr Val Phe Asn Thr Phe Lys Cys Val Met Lys Asn Lys Pro
 169 95 100 105 110
 E--> 171 Lys Phe Ser Pro Val Asp
 E--> 172 115
 C--> 175 (2) INFORMATION FOR SEQ ID NO: 4
 176 (i) SEQUENCE CHARACTERISTICS:
 177 (A) LENGTH: 116 Amino Acids
 178 (B) TYPE: Amino Acid
 179 (C) STRANDEDNESS: single
 180 (D) TOPOLOGY: linear
 181 (ii) MOLECULE TYPE: Protein
 182 (iii) HYPOTHETICAL: no
 183 (iv) ANTI-SENSE: no
 184 (vi) ORIGINAL SOURCE:
 185 (A) ORGANISM: Tenebrio molitor
 C--> 186 (C) INDIVIDUAL ISOLATE: none
 C--> 187 (G) CELL TYPE: fat body and whole organism
 188 (vii) IMMEDIATE SOURCE:
 189 (A) LIBRARY: cDNA
 190 (B) CLONE: 13.17
 191 ~~(ix) FEATURES~~
 193 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:
 195 Leu Thr Glu Ala Gln Ile Glu Lys Leu Asn Lys Ile Ser Lys Lys Cys
 196 1 5 10 15
 198 Gln Asn Glu Ser Gly Val Ser Gln Glu Ile Ile Thr Lys Ala Arg Asn
 199 20 25 30
 201 Gly Asp Trp Glu Asp Asp Pro Lys Leu Lys Arg Gln Val Phe Cys Val

nos. off

Delete globally

P4

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

202          35          40          45
204 Ala Arg Asn Ala Gly Leu Ala Thr Glu Ser Gly Glu Val Val Val Asp
205          50          55          60
207 Val Leu Arg Glu Lys Val Arg Lys Val Thr Asp Asn Asp Glu Glu Thr
208 65          70          75          80
210 Glu Lys Ile Ile Asn Lys Cys Ala Val Lys Arg Asp Thr Val Glu Glu
211          85          90          95
213 Thr Val Phe Asn Thr Phe Lys Cys Val Met Lys Asn Lys Pro Lys Phe
214          100          105          110
E--> 216 Ser Pro Val Asp(*)
E--> 217          115
C--> 344 (2) INFORMATION FOR SEQ ID NO: 7
345      (i) SEQUENCE CHARACTERISTICS:
346          (A) LENGTH: 133 Amino Acids
347          (B) TYPE: Amino Acid
348          (C) STRANDEDNESS: single
349          (D) TOPOLOGY: linear
350      (ii) MOLECULE TYPE: Protein
351      (iii) HYPOTHETICAL: no
352      (iv) ANTI-SENSE: no
353      (vi) ORIGINAL SOURCE:
354          (A) ORGANISM: Tenebrio molitor
C--> 355      (C) INDIVIDUAL ISOLATE: none
C--> 356      (G) CELL TYPE: fat body and whole organism
357      (vii) IMMEDIATE SOURCE:
358          (A) LIBRARY: cDNA
359          (B) CLONE: 2.2, 2.3, and 7.5
360      (ix) FEATURES
362      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:
364 Met Lys Leu Leu Leu Cys Phe Ala Phe Ala Ala Ile Val Ile Gly Ala
365          -15          -10          -5
367 Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys
368          1          5          10
370 Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val
371 15          20          25          30
373 Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu
374          35          40          45
376 Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn
377          50          55          60
379 Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu
380          65          70          75
382 Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu
383          80          85          90
385 Glu Thr Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp
386 95          100          105          110
E--> 388 Phe Ser Pro Ile Asp(*)
E--> 389          115
C--> 392 (2) INFORMATION FOR SEQ ID NO: 8
393      (i) SEQUENCE CHARACTERISTICS:

```

P.S

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

394      (A) LENGTH: 115 Amino Acids
395      (B) TYPE: Amino Acid
396      (C) STRANDEDNESS: single
397      (D) TOPOLOGY: linear
398      (ii) MOLECULE TYPE: Protein
399      (iii) HYPOTHETICAL: no
400      (iv) ANTI-SENSE: no
401      (vi) ORIGINAL SOURCE:
402          (A) ORGANISM: Tenebrio molitor
C--> 403      (C) INDIVIDUAL ISOLATE: none
C--> 404      (G) CELL TYPE: fat body and whole organism
405      (vii) IMMEDIATE SOURCE:
406          (A) LIBRARY: cDNA
407          (B) CLONE: 2.2, 2.3, and 7.5
408      (ix) FEATURES
410      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:
412 Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys Glu Cys
413 1      5      10      15
415 Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val Arg Thr
416      20      25      30
418 Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu Cys Phe
419      35      40      45
421 Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu
422      50      55      60
424 Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp
425 65      70      75      80
427 Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr
428      85      90      95
430 Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser
431      100      105      110
E--> 433 Pro Ile Asp *
E--> 434      115
C--> 500 (2) INFORMATION FOR SEQ ID NO: 10
501      (i) SEQUENCE CHARACTERISTICS:
502          (A) LENGTH: 133 Amino Acids
503          (B) TYPE: Amino Acid
504          (C) STRANDEDNESS: single
505          (D) TOPOLOGY: linear
506      (ii) MOLECULE TYPE: Protein
507      (iii) HYPOTHETICAL: no
508      (iv) ANTI-SENSE: no
509      (vi) ORIGINAL SOURCE:
510          (A) ORGANISM: Tenebrio molitor
C--> 511      (C) INDIVIDUAL ISOLATE: none
C--> 512      (G) CELL TYPE: fat body and whole organism
513      (vii) IMMEDIATE SOURCE:
514          (A) LIBRARY: cDNA
515          (B) CLONE: 3.4
516      (ix) FEATURES

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/876,348

DATE: 06/27/2001

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

518 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 10:

```

520 Met Lys Leu Leu Leu Cys Phe Ala Phe Ala Ala Ile Val Ile Gly Ala
521           -15           -10           -5
523 Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys
524           1           5           10
526 Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val
527 15           20           25           30
529 Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu
530           35           40           45
532 Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn
533           50           55           60
535 Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu
536           65           70           75
538 Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu
539           80           85           90
541 Glu Thr Ala Tyr Asp Thr Phe Lys Val Ile Tyr Asp Ser Lys Pro Asp
542 95           100           105           110

```

E--> 544 Phe Ser Pro Ile Asp *

E--> 545 115

C--> 548 (2) INFORMATION FOR SEQ ID NO: 11

549 (i) SEQUENCE CHARACTERISTICS:

550 (A) LENGTH: 115 Amino Acids

551 (B) TYPE: Amino Acid

552 (C) STRANDEDNESS: single

553 (D) TOPOLOGY: linear

554 (ii) MOLECULE TYPE: Protein

555 (iii) HYPOTHETICAL: no

556 (iv) ANTI-SENSE: no

557 (vi) ORIGINAL SOURCE:

558 (A) ORGANISM: Tenebrio molitor

C--> 559 (C) INDIVIDUAL ISOLATE: none

C--> 560 (G) CELL TYPE: fat body and whole organism

561 (vii) IMMEDIATE SOURCE:

562 (A) LIBRARY: cDNA

563 (B) CLONE: 3.4

564 ~~(ix) FEATURES~~

566 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 11:

```

568 Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys Glu Cys
569 1           5           10           15
571 Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val Arg Thr
572           20           25           30
574 Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu Cys Phe
575           35           40           45
577 Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu
578           50           55           60
580 Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp
581 65           70           75           80
583 Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr
584           85           90           95

```

P.7

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

586 Ala Tyr Asp Thr Phe Lys Val Ile Tyr Asp Ser Lys Pro Asp Phe Ser
 587 100 105 110
 E--> 589 Pro Ile Asp *
 E--> 590 115

C--> 656 (2) INFORMATION FOR SEQ ID NO: 13

657 (i) SEQUENCE CHARACTERISTICS:

658 (A) LENGTH: 133 Amino Acids

659 (B) TYPE: Amino Acid

660 (C) STRANDEDNESS: single

661 (D) TOPOLOGY: linear

662 (ii) MOLECULE TYPE: Protein

663 (iii) HYPOTHETICAL: no

664 (iv) ANTI-SENSE: no

665 (vi) ORIGINAL SOURCE:

666 (A) ORGANISM: Tenebrio molitor

C--> 667 (C) INDIVIDUAL ISOLATE: none

C--> 668 (G) CELL TYPE: fat body and whole organism

669 (vii) IMMEDIATE SOURCE:

670 (A) LIBRARY: cDNA

671 (B) CLONE: 3.9

672 ~~(ix) FEATURES~~

674 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 13:

676 Met Lys Leu Leu Leu Cys Phe Ala Phe Ala Ala Ile Val Ile Gly Ala

677 -15 -10 -5

679 Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys

680 1 5 10

682 Glu Cys Gln Gln Glu Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val

683 15 20 25 30

685 Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu

686 35 40 45

688 Cys Phe Ser Lys Arg Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn

689 50 55 *insert space* 60

E--> 691 Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu

E--> 692 65 70 75

694 Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu

E--> 695 80 85 90

697 Glu Thr Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp

E--> 698 95 100 105 110

E--> 700 Phe Ser Pro Ile Asp *

E--> 701 115

C--> 704 (2) INFORMATION FOR SEQ ID NO: 14

705 (i) SEQUENCE CHARACTERISTICS:

706 (A) LENGTH: 115 Amino Acids

707 (B) TYPE: Amino Acid

708 (C) STRANDEDNESS: single

709 (D) TOPOLOGY: linear

710 (ii) MOLECULE TYPE: Protein

711 (iii) HYPOTHETICAL: no

712 (iv) ANTI-SENSE: no

P.8

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

713      (vi) ORIGINAL SOURCE:
714          (A) ORGANISM: Tenebrio molitor
C--> 715          (C) INDIVIDUAL ISOLATE: none
C--> 716          (G) CELL TYPE: fat body and whole organism
717      (vii) IMMEDIATE SOURCE:
718          (A) LIBRARY: cDNA
719          (B) CLONE: 3.9
720          (ix) FEATURES
722      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 14:
724 Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys Glu Cys
725 1          5          10          15
727 Gln Gln Glu Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val Arg Thr
728          20          25          30
730 Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu Cys Phe
731          35          40          45
733 Ser Lys Arg Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu
734          50          55          60
E--> 736 Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp
E--> 737 65          70          75          80
739 Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr
E--> 740          85          90          95
742 Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser
E--> 743          100          105          110
E--> 745 Pro Ile Asp
E--> 746          115
C--> 749 (2) INFORMATION FOR SEQ ID NO: 15
750      (i) SEQUENCE CHARACTERISTICS:
751          (A) LENGTH: 481 base pairs
752          (B) TYPE: nucleic acid
753          (C) STRANDEDNESS: double
754          (D) TOPOLOGY: linear
755      (ii) MOLECULE TYPE: cDNA to mRNA
756      (iii) HYPOTHETICAL: no
757      (iv) ANTI-SENSE: no
758      (vi) ORIGINAL SOURCE:
759          (A) ORGANISM: Tenebrio molitor
C--> 760          (C) INDIVIDUAL ISOLATE: none
C--> 761          (G) CELL TYPE: fat body and whole organism
762      (vii) IMMEDIATE SOURCE:
763          (A) LIBRARY: cDNA
764          (B) CLONE: 7.5
765          (ix) FEATURES
767      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 15:
769 GGCACGAGCA AAA ATG AAA CTC CTC TTG TGC TTT GCG TTC GCC GCC          46
770          Met Lys Leu Leu Leu Cys Phe Ala Phe Ala Ala
771          -15          -10
E--> 773 ATC GTC ATC GGA GCT CAG GCT CTC ACC GAC GAA CAG ATA CAG AAA
774 Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys
775          -5          1          5

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/876,348

DATE: 06/27/2001

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

777 AGG AAC AAG ATC AGC AAA GAG TGC CAG CAG GTG TCC GGA GTG TCC 136
778 Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val Ser
779 10 15 20
781 CAA GAG ACG ATC GAC AAA GTC CGC ACA GGT GTC TTG GTC GAC GAT 181
782 Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp
783 25 30 35
785 CCC AAA ATG AAG AAG CAC GTC CTC TGC TTC TCG AAG AAA ACT GGA 226
786 Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly
787 40 45 50
789 GTG GCA ACC GAA GCC GGA GAC ACC AAT GTG GAG GTA CTC AAA GCC 271
790 Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala
791 55 60 65
793 AAG CTG AAG CAT GTG GCC AGC GAC GAA GAG GTG GAC AAG ATC GTG 316
794 Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile Val
795 70 75 80
797 CAG AAG TGC GTG GTC AAG AAG GCC ACA CCA GAG GAA ACG GCT TAT 361
798 Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr
799 85 90 95
801 GAC ACC TTC AAG TGT ATT TAC GAC AGT AAA CCT GAT TTC TCT CCT 406
802 Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro
803 100 105 110
805 ATT GAT TAA TTGTTTGTG TTTGGCTGAA TTTTGACAAAT AAAGGTACTA 455
806 Ile Asp *
807 115
809 TCGTTATGTA AAAAAAAAAA AAAAAA 481
C--> 888 (2) INFORMATION FOR SEQ ID NO: 17
889 (i) SEQUENCE CHARACTERISTICS:
890 (A) LENGTH: 165 Amino Acids
891 (B) TYPE: Amino Acid
892 (C) STRANDEDNESS: single
893 (D) TOPOLOGY: linear
894 (ii) MOLECULE TYPE: Protein
895 (iii) HYPOTHETICAL: no
896 (iv) ANTI-SENSE: no
897 (vi) ORIGINAL SOURCE:
898 (A) ORGANISM: Tenebrio molitor
C--> 899 (C) INDIVIDUAL ISOLATE: none
C--> 900 (G) CELL TYPE: fat body and whole organism
901 (vii) IMMEDIATE SOURCE:
902 (A) LIBRARY: cDNA
903 (B) CLONE: 2.2
904 (ix) FEATURES
906 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 17:
908 Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
909 -55 -50 -45
911 Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
912 -40 -35 -30
914 Gly Ser Glu Phe Ala Arg Ala Lys Met Lys Leu Leu Cys Phe Ala
915 -25 -20 -15

```

173

p. 10

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

917 Phe Ala Ala Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile
918 -10 -5 1 5
920 Gln Lys Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val
921 10 15 20
923 Ser Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp
924 25 30 35
926 Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly Val
927 40 45 50
929 Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala Lys Leu
930 55 60 65 70
932 Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile Val Gln Lys Cys
933 75 80 85
935 Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr Asp Thr Phe Lys
936 90 95
E--> 938 Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro Ile Asp 100
E--> 939 105 110 115
C--> 1009 (2) INFORMATION FOR SEQ ID NO: 19
1010 (i) SEQUENCE CHARACTERISTICS:
1011 (A) LENGTH: 149 Amino Acids
1012 (B) TYPE: Amino Acid
1013 (C) STRANDEDNESS: single
1014 (D) TOPOLOGY: linear
1015 (ii) MOLECULE TYPE: Protein
1016 (iii) HYPOTHETICAL: no
1017 (iv) ANTI-SENSE: no
1018 (vi) ORIGINAL SOURCE:
1019 (A) ORGANISM: Tenebrio molitor
C--> 1020 (C) INDIVIDUAL ISOLATE: none
C--> 1021 (G) CELL TYPE: fat body and whole organism
1022 (vii) IMMEDIATE SOURCE:
1023 (A) LIBRARY: cDNA
1024 (B) CLONE: 2.2
1025 (ix) FEATURES
1027 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 19:
1029 Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
1030 -30 -25 -20
1032 Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
1033 -15 -10 -5
1035 Gly Ser Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys
1036 1 5 10
1038 Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val
1039 15 20 25 30
1041 Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu
1042 35 40 45
1044 Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn
1045 50 55 60
1047 Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu
1048 65 70 75
1050 Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu

```

P. 11

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/876,348

DATE: 06/27/2001

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

1051      80      85      90
1053 Glu Thr Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp
1054 95      100      105      110
E--> 1056 Phe Ser Pro Ile Asp *
E--> 1057      115
C--> 1136 (2) INFORMATION FOR SEQ ID NO: 21
1137      (i) SEQUENCE CHARACTERISTICS:
1138          (A) LENGTH: 169 Amino Acids
1139          (B) TYPE: Amino Acid
1140          (C) STRANDEDNESS: single
1141          (D) TOPOLOGY: linear
1142      (ii) MOLECULE TYPE: Protein
1143      (iii) HYPOTHETICAL: no
1144      (iv) ANTI-SENSE: no
1145      (vi) ORIGINAL SOURCE:
1146          (A) ORGANISM: Tenebrio molitor
C--> 1147      (C) INDIVIDUAL ISOLATE: none
C--> 1148      (G) CELL TYPE: fat body and whole organism
1149      (vii) IMMEDIATE SOURCE:
1150          (A) LIBRARY: cDNA
1151          (B) CLONE: 2.3
1152      (ix) FEATURES
1154      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 21:
1156 Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
1157      -55      -50      -45
1159 Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
1160      -40      -35      -30
1162 Gly Ser Glu Phe Ala Arg Ala Lys Met Lys Leu Leu Leu Cys Phe Ala
1163      -25      -20      -15
1165 Phe Ala Ala Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile
1166 -10      -5      1      5
1168 Gln Lys Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val
1169      10      15      20
1171 Ser Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp
1172      25      30      35
1174 Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly Val
1175      40      45      50
1177 Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala Lys Leu
1178 55      60      65      70
1180 Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile Val Gln Lys Cys
1181      75      80      85
1183 Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr Asp Thr Phe Lys
1184      90      95      100
E--> 1186 Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro Ile Asp *
E--> 1187      105      110      115
C--> 1257 (2) INFORMATION FOR SEQ ID NO: 23
1258      (i) SEQUENCE CHARACTERISTICS:
1259          (A) LENGTH: 149 Amino Acids
1260          (B) TYPE: Amino Acid

```

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

1261      (C) STRANDEDNESS: single
1262      (D) TOPOLOGY: linear
1263      (ii) MOLECULE TYPE: Protein
1264      (iii) HYPOTHETICAL: no
1265      (iv) ANTI-SENSE: no
1266      (vi) ORIGINAL SOURCE:
1267          (A) ORGANISM: Tenebrio molitor
C--> 1268      (C) INDIVIDUAL ISOLATE: none
C--> 1269      (G) CELL TYPE: fat body and whole organism
1270      (vii) IMMEDIATE SOURCE:
1271          (A) LIBRARY: cDNA
1272          (B) CLONE: 2.3
1273          (ix) FEATURES
1275      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 23:
1277 Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
1278      -30 -25 -20
1280 Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
1281      -15 -10 -5
1283 Gly Ser Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys
1284      1 5 10
1286 Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val
1287 15 20 25 30
1289 Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu
1290      35 40 45
1292 Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn
1293      50 55 60
1295 Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu
1296      65 70 75
1298 Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu
1299      80 85 90
1301 Glu Thr Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp
1302 95 100 105 110
E--> 1304 Phe Ser Pro Ile Asp *
E--> 1305      115
C--> 1308 (2) INFORMATION FOR SEQ ID NO: 24
1309      (i) SEQUENCE CHARACTERISTICS:
1310          (A) LENGTH: 777 base pairs
1311          (B) TYPE: nucleic acid
1312          (C) STRANDEDNESS: double
1313          (D) TOPOLOGY: linear
1314      (ii) MOLECULE TYPE: cDNA to mRNA
1315      (iii) HYPOTHETICAL: no
1316      (iv) ANTI-SENSE: no
1317      (vi) ORIGINAL SOURCE:
1318          (A) ORGANISM: Tenebrio molitor
C--> 1319      (C) INDIVIDUAL ISOLATE: none
C--> 1320      (G) CELL TYPE: fat body and whole organism
1321      (vii) IMMEDIATE SOURCE:
1322          (A) LIBRARY: cDNA

```

776
P.13

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

1323      (B) CLONE: 13.17
1324      (ix) FEATURES
1327      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 24:
1329      TTGTTAGCGG ATGGAATTCC CTCGTAGGGG ATAATTTTGT TTAACTTAAG      50
1331 AAGGAGATAT ACC ATG GGC AGC AGC CAT CAT CAT CAT CAC AGC      96
1332      Met Gly Ser Ser His His His His His Ser
1333      -65 -60 -55
1335 AGC GGC CTG GTG CCG CGC GGC AGC CAT ATG GCT AGC ATG ACT GGT      141
1336 Ser Gly Leu Val Pro Arg Gly Ser His Met Ala Ser Met Thr Gly
1337      -50 -45 -40
1339 GGA CAG CAA ATG GGT CGC GGA TCC GAA TTC TGG ATC CAA AGA ATT      186
1340 Gly Gln Gln Met Gly Arg Gly Ser Glu Phe Trp Ile Gln Arg Ile
1341      -35 -30 -25
1343 CGG CAC GAG ACT ACT AAG ATG AAG TTG CTC TGT TGT CTA ATC TCC      231
1344 Arg His Glu Thr Thr Lys Met Lys Leu Leu Cys Cys Leu Ile Ser
1345      -20 -15 -10
1348 CTC ATT CTG TTG GTC ACA GTT CAG GCC CTG ACC GAG GCA CAA ATT      276
1349 Leu Ile Leu Leu Val Thr Val Gln Ala Leu Thr Glu Ala Gln Ile
1350      -5 1 5
1352 GAG AAA CTG AAC AAG ATC AGC AAA AAA TGT CAA AAT GAA AGT GGA      321
1353 Glu Lys Leu Asn Lys Ile Ser Lys Lys Cys Gln Asn Glu Ser Gly
1354      10 15 20
1356 GTG TCG CAA GAG ATC ATA ACC AAA GCT CGC AAC GGT GAC TGG GAG      366
1357 Val Ser Gln Glu Ile Ile Thr Lys Ala Arg Asn Gly Asp Trp Glu
1358      25 30 35
1360 GAC GAT CCT AAA CTG AAA CGC CAA GTT TTT TGC GTG GCC AGG AAC      411
1361 Asp Asp Pro Lys Leu Lys Arg Gln Val Phe Cys Val Ala Arg Asn
1362      40 45 50
1364 GCC GGT CTG GCC ACG GAA TCG GGA GAG GTG GTG GTC GAC GTG TTG      456
1365 Ala Gly Leu Ala Thr Glu Ser Gly Glu Val Val Val Asp Val Leu
1366      55 60 65
1368 AGG GAG AAG GTG AGG AAG GTC ACT GAC AAC GAC GAA GAA ACT GAG      501
1369 Arg Glu Lys Val Arg Lys Val Thr Asp Asn Asp Glu Glu Thr Glu
1370      70 75 80
1372 AAA ATC ATC AAT AAG TGC GCC GTC AAG AGA GAT ACT GTT GAA GAG      546
1373 Lys Ile Ile Asn Lys Cys Ala Val Lys Arg Asp Thr Val Glu Glu
1374      85 90 95
E--> 1376 ACG GTG TTC AAT ACT TTC AAA TGT GTC ATG AAA AAC AAG CCA AAG
1377 Thr Val Phe Asn Thr Phe Lys Cys Val Met Lys Asn Lys Pro Lys
1378      100 105 110
E--> 1380 TTC TCA CCA GTT GAT TGA ACCACCACGA CTAGTAGATG GTTCAAATGG      643
1381 Phe Ser Pro Val Asp *
1382      115
E--> 1384 TGTGCTTTAC ATATAAAAAT AAAGTGTTTC TGATGTAAAA AAAAAAAAAA      693
E--> 1386 AAAAAAAAAA AACTCGAGAG TATTCTAGAG CGGCCGCGGG CCCATCGTTT      743
E--> 1388 TCCACCCCTC GAGCACCACC ACCACCACCA CTGAGAT      777
C--> 1391 (2) INFORMATION FOR SEQ ID NO: 25
1392      (i) SEQUENCE CHARACTERISTICS:
1393      (A) LENGTH: 170 Amino Acids

```

595

591

nos. off

174

p. 14

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

1394      (B) TYPE: Amino Acid
1395      (C) STRANDEDNESS: single
1396      (D) TOPOLOGY: linear
1397      (ii) MOLECULE TYPE: Protein
1398      (iii) HYPOTHETICAL: no
1399      (iv) ANTI-SENSE: no
1400      (vi) ORIGINAL SOURCE:
1401          (A) ORGANISM: Tenebrio molitor
C--> 1402      (C) INDIVIDUAL ISOLATE: none
C--> 1403      (G) CELL TYPE: fat body and whole organism
1404      (vii) IMMEDIATE SOURCE:
1405          (A) LIBRARY: cDNA
1406          (B) CLONE: 13.17
1407      (ix) FEATURES
1409      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 25:
1411 Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
1412      -55                      -50                      -45
1414 Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
1415      -40                      -35                      -30
1417 Gly Ser Glu Phe Ala Arg Ala Lys Met Lys Leu Leu Cys Cys Leu Ile
1418 -25                      -20                      -15                      -10
1420 Ser Leu Ile Leu Leu Val Thr Val Gln Ala Leu Thr Glu Ala Gln Ile
E--> 1421      -5                      1 +                      5      ← nos. off
1423 Glu Lys Leu Asn Lys Ile Ser Lys Lys Cys Gln Asn Glu Ser Gly Val
1424      10                      15                      20
1426 Ser Gln Glu Ile Ile Thr Lys Ala Arg Asn Gly Asp Trp Glu Asp Asp
1427      25                      30                      35
1429 Pro Lys Leu Lys Arg Gln Val Phe Cys Val Ala Arg Asn Ala Gly Leu
1430      40                      45                      50
1432 Ala Thr Glu Ser Gly Glu Val Val Val Asp Val Leu Arg Glu Lys Val
1433 55                      60                      65                      70
1435 Arg Lys Val Thr Asp Asn Asp Glu Glu Thr Glu Lys Ile Ile Asn Lys
1436      75                      80                      85
1438 Cys Ala Val Lys Arg Asp Thr Val Glu Glu Thr Val Phe Asn Thr Phe
1439      90                      95                      100
E--> 1441 Lys Cys Val Met Lys Asn Lys Pro Lys Phe Ser Pro Val Asp *
E--> 1442      105                      110                      115
C--> 1512 (2) INFORMATION FOR SEQ ID NO: 27
1513      (i) SEQUENCE CHARACTERISTICS:
1514          (A) LENGTH: 149 Amino Acids
1515          (B) TYPE: Amino Acid
1516          (C) STRANDEDNESS: single
1517          (D) TOPOLOGY: linear
1518      (ii) MOLECULE TYPE: Protein
1519      (iii) HYPOTHETICAL: no
1520      (iv) ANTI-SENSE: no
1521      (vi) ORIGINAL SOURCE:
1522          (A) ORGANISM: Tenebrio molitor
C--> 1523      (C) INDIVIDUAL ISOLATE: none

```

P. 15

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

C--> 1524 (G) CELL TYPE: fat body and whole organism
 1525 (vii) IMMEDIATE SOURCE:
 1526 (A) LIBRARY: cDNA
 1527 (B) CLONE: 13.17
 1528 ~~(ix) FEATURES~~
 1530 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 27:
 1532 Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
 1533 -30 -25 -20
 1535 Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
 1536 -15 -10 -5
 1538 Gly Leu Thr Glu Ala Gln Ile Glu Lys Leu Asn Lys Ile Ser Lys Lys
 1539 1 5 10 15
 1541 Cys Gln Asn Glu Ser Gly Val Ser Gln Glu Ile Ile Thr Lys Ala Arg
 1542 20 25 30
 1544 Asn Gly Asp Trp Glu Asp Asp Pro Lys Leu Lys Arg Gln Val Phe Cys
 1545 35 40 45
 1547 Val Ala Arg Asn Ala Gly Leu Ala Thr Glu Ser Gly Glu Val Val Val
 1548 50 55 60
 1550 Asp Val Leu Arg Glu Lys Val Arg Lys Val Thr Asp Asn Asp Glu Glu
 1551 65 70 75
 1553 Thr Glu Lys Ile Ile Asn Lys Cys Ala Val Lys Arg Asp Thr Val Glu
 1554 80 85 90 95
 1556 Glu Thr Val Phe Asn Thr Phe Lys Cys Val Met Lys Asn Lys Pro Lys
 1557 100 105 110
 E--> 1559 Phe Ser Pro Val Asp *
 E--> 1560 115
 C--> 1639 (2) INFORMATION FOR SEQ ID NO: 29
 1640 (i) SEQUENCE CHARACTERISTICS:
 1641 (A) LENGTH: 173 Amino Acids
 1642 (B) TYPE: Amino Acid
 1643 (C) STRANDEDNESS: single
 1644 (D) TOPOLOGY: linear
 1645 (ii) MOLECULE TYPE: Protein
 1646 (iii) HYPOTHETICAL: no
 1647 (iv) ANTI-SENSE: no
 1648 (vi) ORIGINAL SOURCE:
 1649 (A) ORGANISM: Tenebrio molitor
 C--> 1650 (C) INDIVIDUAL ISOLATE: none
 C--> 1651 (G) CELL TYPE: fat body and whole organism
 1652 (vii) IMMEDIATE SOURCE:
 1653 (A) LIBRARY: cDNA
 1654 (B) CLONE: 3.4
 C--> 1655 (ix) FEATURE:
 1656 (D) OTHER INFORMATION: Precursor protein with His-tag
 1657 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 29:
 1659 Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
 1660 -55 -50 -45
 1662 Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
 1663 -40 -35 -30

P.16

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

1665 Gly Ser Glu Phe Ala Arg Ala Lys Met Lys Leu Leu Leu Cys Phe Ala
1666      -25              -20              -15
1668 Phe Ala Ala Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile
1669 -10              -5              1              5
1671 Gln Lys Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val
1672              10              15              20
1674 Ser Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp
1675              25              30              35
1677 Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly Val
1678      40              45              50
1680 Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala Lys Leu
1681 55              60              65              70
1683 Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile Val Gln Lys Cys
1684              75              80              85
1686 Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr Asp Thr Phe Lys
1687              90              95              100
E--> 1689 Val Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro Ile Asp(*)
E--> 1690              105              110              115
C--> 1761 (2) INFORMATION FOR SEQ ID NO: 31
1762      (i) SEQUENCE CHARACTERISTICS:
1763          (A) LENGTH: 149 Amino Acids
1764          (B) TYPE: Amino Acid
1765          (C) STRANDEDNESS: single
1766          (D) TOPOLOGY: linear
1767      (ii) MOLECULE TYPE: Protein
1768      (iii) HYPOTHETICAL: no
1769      (iv) ANTI-SENSE: no
1770      (vi) ORIGINAL SOURCE:
1771          (A) ORGANISM: Tenebrio molitor
C--> 1772      (C) INDIVIDUAL ISOLATE: none
C--> 1773      (G) CELL TYPE: fat body and whole organism
1774      (vii) IMMEDIATE SOURCE:
1775          (A) LIBRARY: cDNA
1776          (B) CLONE: 3.4
C--> 1777      (ix) FEATURE:
1778          (D) OTHER INFORMATION: Mature Protein with His-tag
1779      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 31:
1781 Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
1782              -30              -25              -20
1784 Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
1785              -15              -10              -5
1787 Gly Ser Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys
1788              1              5              10
1790 Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val
1791 15              20              25              30
1793 Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu
1794              35              40              45
1796 Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn
1797              50              55              60

```

P. 17

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/876,348

DATE: 06/27/2001

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

1799 Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu
1800      65      70      75
1802 Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu
1803      80      85      90
1805 Glu Thr Ala Tyr Asp Thr Phe Lys Val Ile Tyr Asp Ser Lys Pro Asp
1806 95      100      105      110
E--> 1808 Phe Ser Pro Ile Asp *
E--> 1809      115
C--> 1888 (2) INFORMATION FOR SEQ ID NO: 33
1889      (i) SEQUENCE CHARACTERISTICS:
1890          (A) LENGTH: 173 Amino Acids
1891          (B) TYPE: Amino Acid
1892          (C) STRANDEDNESS: single
1893          (D) TOPOLOGY: linear
1894      (ii) MOLECULE TYPE: Protein
1895      (iii) HYPOTHETICAL: no
1896      (iv) ANTI-SENSE: no
1897      (vi) ORIGINAL SOURCE:
1898          (A) ORGANISM: Tenebrio molitor
C--> 1899      (C) INDIVIDUAL ISOLATE: none
C--> 1900      (G) CELL TYPE: fat body and whole organism
1901      (vii) IMMEDIATE SOURCE:
1902          (A) LIBRARY: cDNA
1903          (B) CLONE: 3.9
C--> 1904      (ix) FEATURE:
1905          (D) OTHER INFORMATION: Precursor Protein with His-tag
1906      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 33:
1908 Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
1909      -55      -50      -45
1911 Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
1912      -40      -35      -30
1914 Gly Ser Glu Phe Ala Arg Ala Lys Met Lys Leu Leu Leu Cys Phe Ala
1915      -25      -20      -15
1917 Phe Ala Ala Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile
1918 -10      -5      1      5
1920 Gln Lys Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Glu Ser Gly Val
1921      10      15      20
1923 Ser Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp
1924      25      30      35
1926 Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Arg Thr Gly Val
1927      40      45      50
1929 Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala Lys Leu
1930 55      60      65      70
E--> 1932 Lys HisVal Ala Ser Asp Glu Glu Val Asp Lys Ile Val Gln Lys Cys
E--> 1933      75      80      85
1935 Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr Asp Thr Phe Lys
E--> 1936      90      95
E--> 1938 Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro Ile Asp *
E--> 1939      105      110      115

```

space

delete

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

C--> 2009 (2) INFORMATION FOR SEQ ID NO: 35

2010 (i) SEQUENCE CHARACTERISTICS:

2011 (A) LENGTH: 149 Amino Acids

2012 (B) TYPE: Amino Acid

2013 (C) STRANDEDNESS: single

2014 (D) TOPOLOGY: linear

2015 (ii) MOLECULE TYPE: Protein

2016 (iii) HYPOTHETICAL: no

2017 (iv) ANTI-SENSE: no

2018 (vi) ORIGINAL SOURCE:

2019 (A) ORGANISM: Tenebrio molitor

C--> 2020 (C) INDIVIDUAL ISOLATE: none

C--> 2021 (G) CELL TYPE: fat body and whole organism

2022 (vii) IMMEDIATE SOURCE:

2023 (A) LIBRARY: cDNA

2024 (B) CLONE: 3.9

C--> 2025 (ix) FEATURE:

2026 (D) OTHER INFORMATION: Mature Protein with His-tag

2027 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 35:

2029 Met	Gly	Ser	Ser	Ser	His	His	His	His	Ser	Ser	Gly	Leu	Val	Pro
2030					-30				-25				-20	

2032 Arg	Gly	Ser	His	Met	Ala	Ser	Met	Thr	Gly	Gly	Gln	Gln	Met	Gly	Arg
2033			-15					-10					-5		

2035 Gly	Ser	Leu	Thr	Asp	Glu	Gln	Ile	Gln	Lys	Arg	Asn	Lys	Ile	Ser	Lys
2036		1				5				10					

2038 Glu	Cys	Gln	Gln	Glu	Ser	Gly	Val	Ser	Gln	Glu	Thr	Ile	Asp	Lys	Val
2039	15				20				25					30	

2041 Arg	Thr	Gly	Val	Leu	Val	Asp	Asp	Pro	Lys	Met	Lys	Lys	His	Val	Leu
2042				35				40					45		

2044 Cys	Phe	Ser	Lys	Arg	Thr	Gly	Val	Ala	Thr	Glu	Ala	Gly	Asp	Thr	Asn
2045		50				55				<i>space</i>		60			

E--> 2047 Val Glu Val Leu Lys Ala Lys Leu Lys HisVal Ala Ser Asp Glu Glu

E--> 2048 65 70 75

2050 Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu

E--> 2051 80 85 90

2053 Glu Thr Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp

E--> 2054 95 100 105 110

E--> 2056 Phe Ser Pro Ile Asp *

E--> 2057 115

C--> 2139 (2) INFORMATION FOR SEQ ID NO: 37

2140 (i) SEQUENCE CHARACTERISTICS:

2141 (A) LENGTH: 173 Amino Acids

2142 (B) TYPE: Amino Acid

2143 (C) STRANDEDNESS: single

2144 (D) TOPOLOGY: linear

2145 (ii) MOLECULE TYPE: Protein

2146 (iii) HYPOTHETICAL: no

2147 (iv) ANTI-SENSE: no

2148 (vi) ORIGINAL SOURCE:

p. 19

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

2149 (A) ORGANISM: Tenebrio molitor
 C--> 2150 (C) INDIVIDUAL ISOLATE: none
 C--> 2151 (G) CELL TYPE: fat body and whole organism
 2152 (vii) IMMEDIATE SOURCE:
 2153 (A) LIBRARY: cDNA
 2154 (B) CLONE: 7.5
 C--> 2155 (ix) FEATURE:
 2156 (D) OTHER INFORMATION: Precursor Protein with His-tag
 2157 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 37
 2159 Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
 2160 -55 -50 -45
 2162 Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
 2163 -40 -35 -30
 2165 Gly Ser Glu Phe Ala Arg Ala Lys Met Lys Leu Leu Leu Cys Phe Ala
 2166 -25 -20 -15
 2168 Phe Ala Ala Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile
 2169 -10 -5 1 5
 2171 Gln Lys Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val
 2172 10 15 20
 2174 Ser Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp
 2175 25 30 35
 2177 Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly Val
 2178 40 45 50
 2180 Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala Lys Leu
 2181 55 60 65 70
 2183 Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile Val Gln Lys Cys
 2184 75 80 85
 2186 Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr Asp Thr Phe Lys
 2187 90 95 100
 E--> 2189 Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro Ile Asp *
 E--> 2190 105 110 115
 C--> 2260 (2) INFORMATION FOR SEQ ID NO: 39
 2261 (i) SEQUENCE CHARACTERISTICS:
 2262 (A) LENGTH: 149 Amino Acids
 2263 (B) TYPE: Amino Acid
 2264 (C) STRANDEDNESS: single
 2265 (D) TOPOLOGY: linear
 2266 (ii) MOLECULE TYPE: Protein
 2267 (iii) HYPOTHETICAL: no
 2268 (iv) ANTI-SENSE: no
 2269 (vi) ORIGINAL SOURCE:
 2270 (A) ORGANISM: Tenebrio molitor
 C--> 2271 (C) INDIVIDUAL ISOLATE: none
 C--> 2272 (G) CELL TYPE: fat body and whole organism
 2273 (vii) IMMEDIATE SOURCE:
 2274 (A) LIBRARY: cDNA
 2275 (B) CLONE: 7.5
 C--> 2276 (ix) FEATURE:
 2277 (D) OTHER INFORMATION: Mature protein with His-tag

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

2278 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 39
 2280 Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
 2281 -30 -25 -20
 2283 Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
 2284 -15 -10 -5
 2286 Gly Ser Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys
 2287 1 5 10
 2289 Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val
 2290 15 20 25 30
 2292 Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu
 2293 35 40 45
 2295 Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn
 2296 50 55 60
 2298 Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu
 2299 65 70 75
 2301 Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu
 2302 80 85 90
 2304 Glu Thr Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp
 2305 95 100 105 110

E--> 2307 Phe Ser Pro Ile Asp (*)

E--> 2308 115

C--> 2468 (2) INFORMATION FOR SEQ ID NO: 45

2469 (i) SEQUENCE CHARACTERISTICS:

2470 (A) LENGTH: 481 base pairs

2471 (B) TYPE: nucleic acid

2472 (C) STRANDEDNESS: double

2473 (D) TOPOLOGY: linear

2474 (ii) MOLECULE TYPE: cDNA to mRNA

2475 (iii) HYPOTHETICAL: no

2476 (iv) ANTI-SENSE: no

2477 (vi) ORIGINAL SOURCE:

2478 (A) ORGANISM: Tenebrio molitor

C--> 2479 (C) INDIVIDUAL ISOLATE: none

C--> 2480 (G) CELL TYPE: fat body and whole organism

2481 (vii) IMMEDIATE SOURCE:

2482 (A) LIBRARY: cDNA

2483 (B) CLONE: 2.2

C--> 2484 (ix) FEATURE:

2485 (D) OTHER INFORMATION: Consensus of Seq ID #44 with Tm 13.17

2486 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 45:

2488 GGCANRRNNNN AAR ATG AAR YTN CTC TNN TGY YTN RYN TYC NYC RYY 46

2489 Met Lys Leu Leu Leu Cys Phe Ala Phe Ala Ala

2490 -15 -10

2492 NTN NTN RTC RNA GYT CAG GCY CTN ACC GAN GNA CAR ATN NAG AAA 91

2493 Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys

2494 -5 1 5

2496 NNG AAC AAG ATC AGC AAA RAR TGY CAR NAN GNR NNY GGA GTG TCN 136

2497 Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val Ser

2498 10 15 20

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:39

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

2500 CAA GAG AYN ATN RNC AAA GYY CGC ANN GGT GNC TNG GNN GAY GAT      181
2501 Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp
2502      25                      30                      35
2504 CCY AAA NTG AAR NRN CAN GTY YTY TGC NTN NCN ARG ARN RCY GGN      226
2505 Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly
2506      40                      45                      50
2508 NTG GCN ACN GAA NCN GGA GAN RYN RNN GTN GAN GTR YTN ARR GNN      271
2509 Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala
2510      55                      60                      65
2512 AAG NTG ARG NAN GTN RCY RRC AAC GAC GAA GAR RYN GAN AAR ATC      316
2513 Lys Leu Lys His Val Ala Ser Asn Asp Glu Glu Val Asp Lys Ile
2514      70                      75                      80
2516 RTN NAN AAG TGC GYN GTC AAG ARR GNY ACN NYN GAR GAR ACG GYN      361
2517 Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala
2518      85                      90                      95
2520 TNY RAY ACY TTC AAR NNT RTY NNN RAN ARY AAR CCN RAN TTC TCN      406
2521 Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser
2522      100                     105                     110
2524 CCN RTT GAT TRA NYNNYYNNNA YTNNGNNNRNR NTTYRANAAT AAAGNNNNNTN      458
2525 Pro Ile Asp *
2526      115

```

E--> 2528 TNRTNNNRNA AAAAAAAAAA AAAAAA

C--> 2533 (2) INFORMATION FOR SEQ ID NO: 46

2534 (i) SEQUENCE CHARACTERISTICS:

2535 (A) LENGTH: 481 base pairs

2536 (B) TYPE: nucleic acid

2537 (C) STRANDEDNESS: double

2538 (D) TOPOLOGY: linear

2539 (ii) MOLECULE TYPE: cDNA to mRNA

2540 (iii) HYPOTHETICAL: no

2541 (iv) ANTI-SENSE: no

2542

2543 (vi) ORIGINAL SOURCE:

2544 (A) ORGANISM: Tenebrio molitor

C--> 2545 (C) INDIVIDUAL ISOLATE: none

C--> 2546 (G) CELL TYPE: fat body and whole organism

2547 (vii) IMMEDIATE SOURCE:

2548 (A) LIBRARY: cDNA

2549 (B) CLONE: 2.2

C--> 2550 (ix) FEATURE:

2551 (D) OTHER INFORMATION: Consensus of Seq ID #45 with B1/B2

2552 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 46:

2554 GGCANRRNNNN AAR ATG AAR YTN CTC TNN TGY YTN RYN TYY NYC RYY 46

2555 Met Lys Leu Leu Leu Cys Phe Ala Phe Ala Ala

2556 -15 -10

2558 NTN NTN RTC NNA GYT CAG GCY NTN ACY NAN GNA NAN NTN NAG NNA 91

2559 Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys

2560 -5 1 5

2562 NNG NNC NAR AYC AGC RNA RAR TGY NAR NNN GNR NNY GGA GTG TCN 136

484

p. 22

5

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:40

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

2563 Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val Ser
2564      10      15      20
2566 NAA GAN RYN ATN RNN ARA GYY CGC ANN GGT GNC TNG GNN GAY GAY      181
2567 Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp
2568      25      30      35
2570 CCY AAA NTG AAR NNN CAN NTY YTY TGC NTN NYN ARG RNN NYI GRN      226
2571 Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly
2572      40      45      50
2574 NTR GYN RCN GAA NCN GGA GAN RYN RNN GYN GAN RYR YTN ARR GNN      271
2575 Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala
2576      55      60      65
2578 AAG NTG ANG NRN NNN NNN RNN ANN RNN RAR RAR RYN RRN ARR NTN      316
2579 Lys Leu Lys His Val Ala Ser Asn Asp Glu Glu Val Asp Lys Ile
2580      70      75      80
2582 NYN NRN ARN NNN NNN NNN NNG ARN RNN NYN NNN RAR RNR NNN NNN      361
2583 Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala
2584      85      90      95
2586 TNN RAN NYN YYN AAN NNN NNY NNN RRN ANN ARN CCN RNN TYY TYN      406
2587 Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser
2588     100     105     110
2590 CNN RYT RNT TRN NYNNNNNNNN YNNGNNNRNR NTTYRANAAT AAAGNNNYTN      458
2591 Pro Ile Asp *
2592     115

```

E--> 2594 TNRTNNNRNA AAAAAAAAAA AAAAAA

C--> 2599 (2) INFORMATION FOR SEQ ID NO: 47

(i) SEQUENCE CHARACTERISTICS:

2601 (A) LENGTH: 481 base pairs

2602 (B) TYPE: nucleic acid

2603 (C) STRANDEDNESS: double

2604 (D) TOPOLOGY: linear

2605 (ii) MOLECULE TYPE: cDNA to mRNA

2606 (iii) HYPOTHETICAL: no

2607 (iv) ANTI-SENSE: no

2608 (vi) ORIGINAL SOURCE:

2609 (A) ORGANISM: Tenebrio molitor

C--> 2610 (C) INDIVIDUAL ISOLATE: none

C--> 2611 (G) CELL TYPE: fat body and whole organism

2612 (vii) IMMEDIATE SOURCE:

2613 (A) LIBRARY: cDNA

2614 (B) CLONE: 2.2

C--> 2615 (ix) FEATURE:

2616 (D) OTHER INFORMATION: Consensus of Seq. ID #46 with AFP-3

2617 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 47:

2620 GGCNRRNNNN AAR ATG AAR YTN CTC YNN TGY YTN RYN YYY NYI RYY 46

2621 Met Lys Leu Leu Cys Phe Ala Phe Ala Ala

2622 -15 -10

2624 NTN NTN RYC NNR RYY YAN GCY NTN ACY NAN RNA NNN NNN NAG NNR 91

2625 Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys

2626 -5 1 5

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:40

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

2628 NNG NNY NAR NNC AGC RNN RNN TGY NAR NNN GNR NNY GGA GTR TCN      136
2629 Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Glu Ser Gly Val Ser
2630      10      15      20
2632 NAA GAN NYN NTN RNN ARR GYY CGC ANN NGT GNN NNR GNN GAY GAY      181
2633 Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp
2634      25      30      35
2636 CCY AAA NTG AAR NNN CAN NYY YTY TGC NTN NYN ARG RNN NYY GRN      226
2637 Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly
2638      40      45      50
2640 NTN RYN RNN GNN NNN GGN GAN NYN NNN NYN GAN NNN NTN ARR RNN      271
2641 Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala
2642      55      60      65
2644 AAR NTN ANG NRN NNN NNN RNN RNN NNN RAR RAR RYN RRN RRN NTN      316
2645 Lys Leu Lys His Val Ala Ser Asn Asp Glu Glu Val Asp Lys Ile
2646      70      75      80
2648 NYN NNN ARN NNN NNN NNN NNG ARN RNN NYN NNN NAR NNN NNN NNN      361
2649 Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala
2650      85      90      95
2652 NNN RAN NYN YYN AAN NNN NNY NNN RRN ANN ARN YCN NNN TNN NNN      406
2653 Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser
2654      100     105     110
2656 CNN NYN RNN TRN NNNNNNNNNN YNNRRNNNNNN NNNNNNNAAT AAANNNNNNNN      458
2657 Pro Ile Asp *
2658      115

```

E--> 2660 NNNNNNNNNNA AAAAAAAAAA AAAAAA

484

C--> 2664 (2) INFORMATION FOR SEQ ID NO: 48

2665 (i) SEQUENCE CHARACTERISTICS:

2666 (A) LENGTH: 133 Amino Acids

2667 (B) TYPE: Amino Acid

2668 (C) STRANDEDNESS: single

2669 (D) TOPOLOGY: linear

2670 (ii) MOLECULE TYPE: Protein

2671 (iii) HYPOTHETICAL: no

2672 (iv) ANTI-SENSE: no

2673 (vi) ORIGINAL SOURCE:

2674 (A) ORGANISM: Tenebrio molitor

C--> 2675 (C) INDIVIDUAL ISOLATE: none

C--> 2676 (G) CELL TYPE: fat body and whole organism

2677 (vii) IMMEDIATE SOURCE:

2678 (A) LIBRARY: cDNA

2679 (B) CLONE:

C--> 2680 (ix) FEATURE:

2681 (D) OTHER INFORMATION: General Consensus of Clones,

2682 B1, B2 and AFP-3

2684 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 48:

2686 Met Lys Leu Leu Leu Cys Phe Ala Phe Ala Ala Ile Val Ile Gly Ala

E--> 2687 Cys Leu Ile Ser Leu Ile Leu Leu Val Thr Val

E--> 2688 Thr Leu Val Ala Ala Thr

E--> 2689 Val

(See 1.822 of
Sequence Rules)

General s

Invalid
grouping of
amino acids

What is this?

RAW SEQUENCE LISTING

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:40

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

```

E--> 2690          -15          -10          -5
      2692 Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys
E--> 2693 Tyr      Ile      Glu Ala Asp Leu Glu Leu Leu Arg Gln Thr      Ala
E--> 2694          Thr Pro Arg          Lys      His      Asp
E--> 2695          1          5          10
      2697 Glu Cys Gln Gln Glu Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val
E--> 2698 Lys      Lys Asn Val      Ala      Glu Asp Ile Leu Thr Arg Ala
E--> 2699 Ala      Thr          Ala Val      Lys
E--> 2700          Ala      Ser      Asn
E--> 2701 15          20          25          30
      2703 Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu
E--> 2704      Asn Arg Asp Trp Glu      Leu      Arg Gln Leu Phe
E--> 2705      Lys      Glu Glu      Met      Ala
E--> 2706          Glu
E--> 2707          35          40          45
      2709 Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn
E--> 2710      Val Ala Arg Arg Ala Ile Leu Val Ala Ala Ser      Glu Ile Glu
E--> 2711      Ile Phe      Ala Leu Glu Ile Ile Asp          Val Val
E--> 2712          Leu      Asn      Glu      Phe Gln
E--> 2713          Phe
E--> 2714          50          55          60
E--> 2716 Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser ^^^ Asp Glu
E--> 2717 Ala Asp Thr Phe Arg Glu      Val Thr Arg Asn Thr Asn Asp Pro
E--> 2718 Leu      His Ile      Thr      Phe Arg Lys      Ser Asp Asn
E--> 2719          Glu      Glu His
E--> 2720          65          70          75
      2722 Glu Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro
E--> 2723 Lys Ser Glu Asp Lys Leu Ile Glu      Ala      Thr Glu Asp      Val
E--> 2724      Thr          Asn      Thr      Arg
E--> 2725          Ala
E--> 2726      80          85          90
      2728 Glu Glu Thr Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro
E--> 2729 Gln Asp Ser Val Phe Glu Val Thr      Val Val Leu Lys Asn Arg Ser
E--> 2730      His      Ser Ala Asn Phe          Met      Asp
E--> 2731          His
E--> 2732 95          100          105          110
E--> 2734 Asp Phe Ser Pro Ile Asp ^^^ ^^^ *
E--> 2735 Asn      Phe Gly Asp Leu Phe Val *
E--> 2736 Lys      Val
E--> 2737          115
E--> 2742 166
E--> 2746 RB125 RT

```

*Involved
grouping of
amino
acids*

Delete

*Delete
at end of
file*

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/876,348

DATE: 06/27/2001

TIME: 15:25:41

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

L:3 M:220 C: Keyword misspelled or invalid format, [(1) GENERAL INFORMATION:]
L:8 M:220 C: Keyword misspelled or invalid format, [(iv) CORRESPONDENCE ADDRESS:]
L:13 M:220 C: Keyword misspelled or invalid format, [(F) ZIP:]
L:14 M:220 C: Keyword misspelled or invalid format, [(v) COMPUTER READABLE FORM:]
L:20 M:220 C: Keyword misspelled or invalid format, [(A) APPLICATION NUMBER:]
L:21 M:220 C: Keyword misspelled or invalid format, [(B) FILING DATE:]
L:23 M:220 C: Keyword misspelled or invalid format, [(vii) PRIOR APPLICATION DATA:]
L:26 M:220 C: Keyword misspelled or invalid format, [(viii) ATTORNEY/AGENT INFORMATION:]
L:30 M:220 C: Keyword misspelled or invalid format, [(ix) TELECOMMUNICATION INFORMATION:]
L:35 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:47 M:220 C: Keyword misspelled or invalid format, [(C) INDIVIDUAL ISOLATE:]
L:48 M:220 C: Keyword misspelled or invalid format, [(G) CELL TYPE:]
L:52 M:220 C: Keyword misspelled or invalid format, [(ix) FEATURE:]
L:60 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:71 M:220 C: Keyword misspelled or invalid format, [(C) INDIVIDUAL ISOLATE:]
L:72 M:220 C: Keyword misspelled or invalid format, [(G) CELL TYPE:]
L:80 M:254 E: No. of Bases conflict, Input:36 Counted:46 SEQ:2
M:254 Repeated in SeqNo=2
L:124 M:204 E: No. of Bases differ, LENGTH:Input:566 Counted:576 SEQ:2
L:127 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:138 M:220 C: Keyword misspelled or invalid format, [(C) INDIVIDUAL ISOLATE:]
L:139 M:220 C: Keyword misspelled or invalid format, [(G) CELL TYPE:]
L:151 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:3
L:171 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:172 M:203 E: No. of Seq. differs, LENGTH:Input:134 Found:135 SEQ:3
L:175 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:186 M:220 C: Keyword misspelled or invalid format, [(C) INDIVIDUAL ISOLATE:]
L:187 M:220 C: Keyword misspelled or invalid format, [(G) CELL TYPE:]
L:216 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:217 M:203 E: No. of Seq. differs, LENGTH:Input:116 Found:117 SEQ:4
L:220 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:231 M:220 C: Keyword misspelled or invalid format, [(C) INDIVIDUAL ISOLATE:]
L:232 M:220 C: Keyword misspelled or invalid format, [(G) CELL TYPE:]
L:282 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:293 M:220 C: Keyword misspelled or invalid format, [(C) INDIVIDUAL ISOLATE:]
L:294 M:220 C: Keyword misspelled or invalid format, [(G) CELL TYPE:]
L:344 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:355 M:220 C: Keyword misspelled or invalid format, [(C) INDIVIDUAL ISOLATE:]
L:356 M:220 C: Keyword misspelled or invalid format, [(G) CELL TYPE:]
L:388 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:389 M:203 E: No. of Seq. differs, LENGTH:Input:133 Found:134 SEQ:7
L:392 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:403 M:220 C: Keyword misspelled or invalid format, [(C) INDIVIDUAL ISOLATE:]
L:404 M:220 C: Keyword misspelled or invalid format, [(G) CELL TYPE:]
L:433 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:434 M:203 E: No. of Seq. differs, LENGTH:Input:115 Found:116 SEQ:8
L:437 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:448 M:220 C: Keyword misspelled or invalid format, [(C) INDIVIDUAL ISOLATE:]

VERIFICATION SUMMARY

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:41

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

L:449 M:220 C: Keyword misspelled or invalid format, [(G) CELL TYPE:]
L:500 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:511 M:220 C: Keyword misspelled or invalid format, [(C) INDIVIDUAL ISOLATE:]
L:512 M:220 C: Keyword misspelled or invalid format, [(G) CELL TYPE:]
L:544 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:545 M:203 E: No. of Seq. differs, LENGTH:Input:133 Found:134 SEQ:10
L:548 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:559 M:220 C: Keyword misspelled or invalid format, [(C) INDIVIDUAL ISOLATE:]
L:560 M:220 C: Keyword misspelled or invalid format, [(G) CELL TYPE:]
L:589 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:590 M:203 E: No. of Seq. differs, LENGTH:Input:115 Found:116 SEQ:11
L:593 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:604 M:220 C: Keyword misspelled or invalid format, [(C) INDIVIDUAL ISOLATE:]
L:605 M:220 C: Keyword misspelled or invalid format, [(G) CELL TYPE:]
L:656 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:667 M:220 C: Keyword misspelled or invalid format, [(C) INDIVIDUAL ISOLATE:]
L:668 M:220 C: Keyword misspelled or invalid format, [(G) CELL TYPE:]
L:691 M:333 E: Wrong sequence grouping, Amino acids not in groups!
L:692 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:13
M:332 Repeated in SeqNo=13
L:700 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:704 M:220 C: Keyword misspelled or invalid format, [(2) INFORMATION FOR SEQ ID NO:]
L:736 M:333 E: Wrong sequence grouping, Amino acids not in groups!
L:737 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:14
M:332 Repeated in SeqNo=14
L:745 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:773 M:254 E: No. of Bases conflict, Input:90 Counted:91 SEQ:15
L:938 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:939 M:203 E: No. of Seq. differs, LENGTH:Input:169 Found:174 SEQ:17
L:1056 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:1057 M:203 E: No. of Seq. differs, LENGTH:Input:149 Found:150 SEQ:19
L:1186 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:1187 M:203 E: No. of Seq. differs, LENGTH:Input:169 Found:174 SEQ:21
L:1304 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:1305 M:203 E: No. of Seq. differs, LENGTH:Input:149 Found:150 SEQ:23
L:1376 M:254 E: No. of Bases conflict, Input:595 Counted:591 SEQ:24
M:254 Repeated in SeqNo=24
L:1388 M:204 E: No. of Bases differ, LENGTH:Input:777 Counted:776 SEQ:24
L:1421 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:25
M:342 Repeated in SeqNo=25
L:1442 M:203 E: No. of Seq. differs, LENGTH:Input:170 Found:175 SEQ:25
L:1559 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:1560 M:203 E: No. of Seq. differs, LENGTH:Input:149 Found:150 SEQ:27
L:1689 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:1690 M:203 E: No. of Seq. differs, LENGTH:Input:173 Found:174 SEQ:29
L:1750 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:30
L:1754 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:30
L:1758 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:30
L:1808 M:342 E: Invalid Stop Code On Error, STOP CODON:*

VERIFICATION SUMMARY

DATE: 06/27/2001

PATENT APPLICATION: US/09/876,348

TIME: 15:25:41

Input Set : A:\SEQLIST.txt

Output Set: N:\CRF3\06272001\I876348.raw

L:1809 M:203 E: No. of Seq. differs, LENGTH:Input:149 Found:150 SEQ:31
L:1932 M:333 E: Wrong sequence grouping, Amino acids not in groups!
L:1933 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:33
M:332 Repeated in SeqNo=33
L:1938 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:2047 M:333 E: Wrong sequence grouping, Amino acids not in groups!
L:2048 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:35
M:332 Repeated in SeqNo=35
L:2056 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:2101 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:36
L:2105 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:36
L:2110 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:36
L:2114 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:36
L:2118 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:36
L:2122 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:36
L:2126 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:36
L:2130 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:36
L:2189 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:2190 M:203 E: No. of Seq. differs, LENGTH:Input:173 Found:174 SEQ:37
L:2307 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:2308 M:203 E: No. of Seq. differs, LENGTH:Input:149 Found:150 SEQ:39
L:2528 M:204 E: No. of Bases differ, LENGTH:Input:481 Counted:484 SEQ:45
L:2594 M:204 E: No. of Bases differ, LENGTH:Input:481 Counted:484 SEQ:46
L:2660 M:204 E: No. of Bases differ, LENGTH:Input:481 Counted:484 SEQ:47
L:2687 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:0
M:332 Repeated in SeqNo=48
L:2716 M:330 E: (2) Invalid Amino Acid Designator, 1
L:2734 M:342 E: Invalid Stop Code On Error, STOP CODON:*
L:2734 M:330 E: (2) Invalid Amino Acid Designator, 2
M:342 Repeated in SeqNo=48
L:2746 M:333 E: Wrong sequence grouping, Amino acids not in groups!
L:2746 M:330 E: (2) Invalid Amino Acid Designator, 2
L:2746 M:203 E: No. of Seq. differs, LENGTH:Input:133 Found:320 SEQ:48